Supplemental Mathematical Operators
Range: 2A00–2AFF

This file contains an excerpt from the character code tables and list of character names for
The Unicode Standard, Version 10.0

This file may be changed at any time without notice to reflect errata or other updates to the Unicode Standard.
See http://www.unicode.org/errata/ for an up-to-date list of errata.

See http://www.unicode.org/charts/ for access to a complete list of the latest character code charts.
See http://www.unicode.org/charts/PDF/Unicode-10.0/ for charts showing only the characters added in Unicode 10.0.
See http://www.unicode.org/Public/10.0.0/charts/ for a complete archived file of character code charts for Unicode 10.0.

Disclaimer
These charts are provided as the online reference to the character contents of the Unicode Standard, Version 10.0 but do not provide all the information needed to fully support individual scripts using the Unicode Standard. For a complete understanding of the use of the characters contained in this file, please consult the appropriate sections of The Unicode Standard, Version 10.0, online at http://www.unicode.org/versions/Unicode10.0.0/, as well as Unicode Standard Annexes #9, #11, #14, #15, #24, #29, #31, #34, #38, #41, #42, #44, and #45, the other Unicode Technical Reports and Standards, and the Unicode Character Database, which are available online.

See http://www.unicode.org/ucd/ and http://www.unicode.org/reports/

A thorough understanding of the information contained in these additional sources is required for a successful implementation.

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N-ary operators

N-ARY CIRCLED DOT OPERATOR 

N-ARY CIRCLED PLUS OPERATOR 

N-ARY CIRCLED TIMES OPERATOR 

N-ARY UNION OPERATOR WITH DOT 

N-ARY UNION OPERATOR WITH PLUS 

N-ARY SQUARE INTERSECTION OPERATOR 

N-ARY SQUARE UNION OPERATOR 

TWO LOGICAL AND OPERATOR 

TWO LOGICAL OR OPERATOR 

N-ARY TIMES OPERATOR 

N-ARY SQUARE INTERSECTION OPERATOR 

N-ARY SQUARE UNION OPERATOR 

MODULO TWO SUM 

FINITE PART INTEGRAL 

INTEGRAL AROUND A POINT OPERATOR 

INTEGRAL WITH DOUBLE STROKE 

INTEGRAL AVERAGE WITH SLASH 

CIRCULATION FUNCTION 

ANTICLOCKWISE INTEGRATION 

LINE INTEGRATION WITH RECTANGULAR PATH AROUND POLE 

LINE INTEGRATION WITH SEMICIRCULAR PATH AROUND POLE 

LINE INTEGRATION NOT INCLUDING THE POLE 

INTEGRAL AROUND A POINT OPERATOR 

QUATERNION INTEGRAL OPERATOR 

INTEGRAL WITH LEFTWARDS ARROW WITH HOOK 

INTEGRAL WITH TIMES SIGN 

INTEGRAL WITH INTERSECTION 

INTEGRAL WITH UNION 

INTEGRAL WITH OVERBAR 

INTEGRAL WITH UNDERBAR 

Miscellaneous large operators

JOIN 

LARGE LEFT TRIANGLE OPERATOR 

Miscellaneous mathematical operators

Z NOTATION SCHEMA COMPOSITION 

Z NOTATION SCHEMA PIPING 

Z NOTATION SCHEMA PROJECTION 

PLUS SIGN WITH SMALL CIRCLE ABOVE 

PLUS SIGN WITH CIRCUMFLEX ACCENT ABOVE 

PLUS SIGN WITH TILDE ABOVE 

PLUS SIGN WITH DOT BELOW 

PLUS SIGN WITH TILDE BELOW 

PLUS SIGN WITH SUBSCRIPT TWO 

PLUS SIGN WITH BLACK TRIANGLE 

MINUS SIGN WITH COMMA ABOVE 

MINUS SIGN WITH DOT BELOW 

MINUS SIGN WITH FALLING DOTS 

MINUS SIGN WITH RISING DOTS 

PLUS SIGN IN LEFT HALF CIRCLE 

PLUS SIGN IN RIGHT HALF CIRCLE 

MULTIPLICATION SIGN IN DOUBLE CIRCLE 

MULTIPLICATION SIGN IN LEFT HALF CIRCLE 

MULTIPLICATION SIGN IN RIGHT HALF CIRCLE 

INTERSECTIONS AND UNIONS 

INTERSECTION WITH DOT 

UNION WITH MINUS SIGN 

AMALGAMATION OR COPRODUCT 

RELATIONAL DATABASE THEORY 

JOIN 

LARGE LEFT TRIANGLE OPERATOR 

PARTIAL JOIN 

FULL OUTER JOIN 

.placeholder
### Supplemental Mathematical Operators

#### Miscellaneous mathematical operator

- **2AF6**: TRIPLE COLON OPERATOR
  - logic
  - \( \vdots \) tricolon
  - \( \vdots \) vertical ellipsis

#### Relations

- **2AF7**: TRIPLE NESTED LESS-THAN
  - \( \llll \) very much less-than
- **2AF8**: TRIPLE NESTED GREATER-THAN
  - \( \gggg \) very much greater-than
- **2AF9**: DOUBLE-LINE SLANTED LESS-THAN OR EQUAL TO
  - \( \lessgtr \) less-than over equal to
- **2AFF**: DOUBLE-LINE SLANTED GREATER-THAN OR EQUAL TO
  - \( \gtrless \) greater-than over equal to

#### Operators

- **2AFC**: LARGE TRIPLE VERTICAL BAR OPERATOR
  - often n-ary
  - \( \lll \) triple vertical bar binary relation
  - \( \lll \) triple vertical bar delimiter

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<table>
<thead>
<tr>
<th>Unicode Code</th>
<th>Character</th>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2A3C</td>
<td>⨼</td>
<td>INTERIOR PRODUCT</td>
<td>tall variant with narrow foot</td>
</tr>
<tr>
<td>2A3D</td>
<td>⨽</td>
<td>RIGHTHAND INTERIOR PRODUCT</td>
<td>tall variant with narrow foot</td>
</tr>
<tr>
<td>2A9D</td>
<td>⪝</td>
<td>SIMILAR OR LESS-THAN</td>
<td>with similar following the slant of the upper leg</td>
</tr>
<tr>
<td>2A9E</td>
<td>⪞</td>
<td>SIMILAR OR GREATER-THAN</td>
<td>with similar following the slant of the upper leg</td>
</tr>
<tr>
<td>2AAC</td>
<td>⪬</td>
<td>SMALLER THAN OR EQUAL TO</td>
<td>with slanted equal</td>
</tr>
<tr>
<td>2AAD</td>
<td>⪭</td>
<td>LARGER THAN OR EQUAL TO</td>
<td>with slanted equal</td>
</tr>
<tr>
<td>2ACB</td>
<td>⫋</td>
<td>SUBSET OF ABOVE NOT EQUAL TO</td>
<td>with stroke through bottom members</td>
</tr>
<tr>
<td>2ACC</td>
<td>⫌</td>
<td>SUPERSET OF ABOVE NOT EQUAL TO</td>
<td>with stroke through bottom members</td>
</tr>
</tbody>
</table>